Real Time KYC using Face Recognization for Banking System

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Abstract **- Know your customer (KYC) is a set of guidelines used by banks to verify a customer's identification. In the current scenario, an eKYC collects and stores an individual's information, as well as photocopies of valid government identity certificates, in a central database. We suggest a real-time KYC mechanism for the bank system in this paper. A web-based platform for the banking sector that uses real-time KYC with face recognition is available. With photocopies of all legal official documents, such as Aadhar cards, passports, and so on, this technology recognize live faces. When the KYC process is completed, the customer receives an email from the bank confirming that the KYC has been completed and that the KYC has been approved.**

Index Terms **- Know your customer, Realtime, government document, immediately, Face Recognization, framework.**

I.INTRODUCTION

KYC laws often require a bank employee to validate a customer's identity in person. However, banks capacity to enroll new customers in this manner is being hampered by social distance rules. Know Your Customer is abbreviated as KYC. Before delivering any financial service to customers, financial institutions like banks and non-banking finance companies (NBFCs) have to comply with KYC rules. KYC is used to verify a customer's credentials and prove his or her identification. The process of electronically validating a customer's credentials, also known as paperless KYC, is known as eKYC. You're probably curious about the KYC verification process on the internet right now. When opening an account and on a regular basis, KYC (Know Your Customer) is an essential process for identifying and validating a client's identification.

Our system propose while doing KYC customer need to upload there document like Pan card, Aadhar card or driving licence and customer needs to just be there in front of camera and our system will automatically detect the person and liveliness check will be done. System will compare the uploaded documents and live detection of customer. If both match then KYC will be done successfully and mail will be arrived on the mail ID customer has provided. Our proposed system is safe, secure, paperless, time saving and instant.

II. LITERATURE SURVEY

[1]The EKYC Mobile Application, which uses Optical Character Recognition, was proposed by Yash Kumar, Komal Sakpal, Gaurav Sharma, and Prof. A. Umbare. The goal of this project is to use machine learning and optical character recognition to construct an Android mobile application (OCR). This mobile application is set up in such a way that customers may update and authenticate their credentials for banking reasons with ease. Customers can update their KYC via mobile apps by snapping images of their Aadhar and PAN credentials. The Programme will employ OCR (Optical Character Recognition) to reduce typing errors and, as a result, fill out the form correctly, saving time.

[2]KYC Optimization using Distributed Ledger Technology is a novel concept proposed by Jose Parra-Moyano and Omri Ross. The authors suggest a new solution based on distributed ledger technology (DLT) that lowers the cost of financial institutions' basic KYC verification procedure while also improving user experience. The main KYC verification process is performed once for each customer in the proposed system. Regardless of how many financial institutions the customer wishes to work with. This system makes it possible to be efficient. Gains, cost savings, improved customer experience, and increased transparency are all part of the onboarding process for a new customer.

[3]This paper was created by the authors to be studied. In this work the author proposed an economical, swift, secure and transparent platform for KYC document verification for the banking system through InterPlanetary File System (IPFS) and blockchain technology. The proposed system allows the customer to open am account at one bank, complete the KYc process there, and generate hash value using the IPFS network and share it using blockchain technique. The proposed system can save time, money and repetitive work during the KYC process when someone tries to open an account at multiple banks.

[4]This article, written by Arjun Soni and Reena Duggal, aims to investigate the Know Your Customer process, identify the issues it faces, and highlight the current systems shortcomings in efficiently executing KYC rules (especially in large Indian banks). It then proposes a convincing solution based on Big Data Analytic tools such as Fuzzy Matching and MapReduce, utilising real-life examples. The writers are sure that the solution's structure will enable them to create a functioning prototype in a short period of time. It is extremely difficult to efficiently execute KYC rules across all bank branches in India, one of the world's most populated countries. A individual having an excessive number of identification cards may cause a problem. A plethora of possibilities have made creating one's identity in India somewhat perplexing. Is the Aadhaar card, PAN card, driver's licence, or passport flashed? This paper uses Big Data to try to solve these problems.

[5] Jitendra Kumar and Kiran Kumar Pattanaik proposed that current KYC verification relies on supplied documents and is unable to check identity from the source of identity, as is the case with current KYC verification in banking. The proposed verification cycle will be adequate to register the requester and build a more dependable and legitimate business relationship. The proposed framework and verification cycle for identity verification using Big Data will make valid sources of identity verification more accessible to financial institutions.

III. BACKGROUND

Know your customer (KYC) is a term that refers to the process of managing customers and verifying their identities. The customer submits this document to an organisation in order to establish trust between the two parties. Because there was no mechanism to check clients identities at the time, KYC was introduced in the United States in 1990. The goal of KYC at the time was to prevent terrorist financing and money laundering through banks. The bank is the primary investor in KYC. Customers are asked to fill out a KYC document so that their identities may be verified. To prevent money laundering, terrorist financing, and financial fraud, the bank double-checks the information provided by clients. As a result, banks do not now enable any account holder to open an account without KYC proof. The KYC paperwork comprises the following information: customer information, ID proof, address proof, and photograph.

In this situation, the chances of the paper getting misplaced were higher. As a result, a digital KYC system known as eKYC was proposed. The customer fills out the KYC document through the organization's web application in this method. The information provided was maintained in centralised databases. Customer information can be accessed by the business at any time by using the customer id. However, because data is maintained in a centralised database, centralised system flaws such as single point of failure, data redundancy, and third-party verification still remain. Furthermore, data housed on a centralised server can be compromised/attacked by hackers, increasing the risk of customer personal data being leaked.

IV. BLOCK DIAGRAM

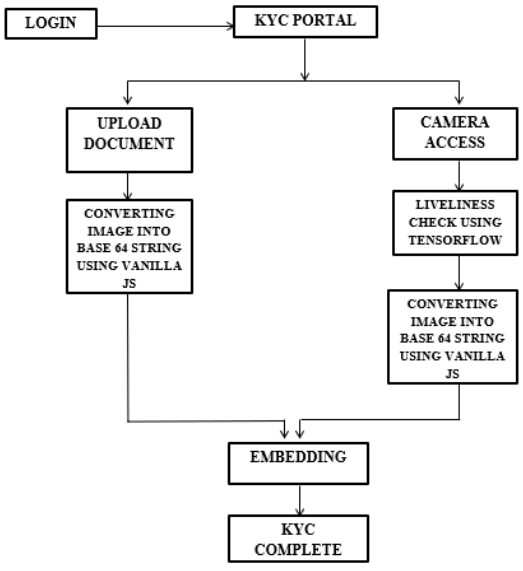

Fig I: Block Diagram

In block diagram first block is a login block when user can login through its ID and password then user going to KYC portal. KYC portal has basically to section in section 1 is to upload documents in this user can upload documents like Aadhar card, pan card, passbook, driving license, passport, etc in second section user has to give a camera access to the system upload a document then convert image into base 64 string using Vanilla JS. Base64 is an encoding algorithm that converts any characters binary data and image aur sound file into a readable string and then going for embedding another side when user give access to system it checks it's liveliness using Tensor flow JS and then convert image to base64 string using Vanilla JS and then going for embedding upload document end-user detection is compare in embedding. both are match then KYC is completed.

V. FLOWCHART

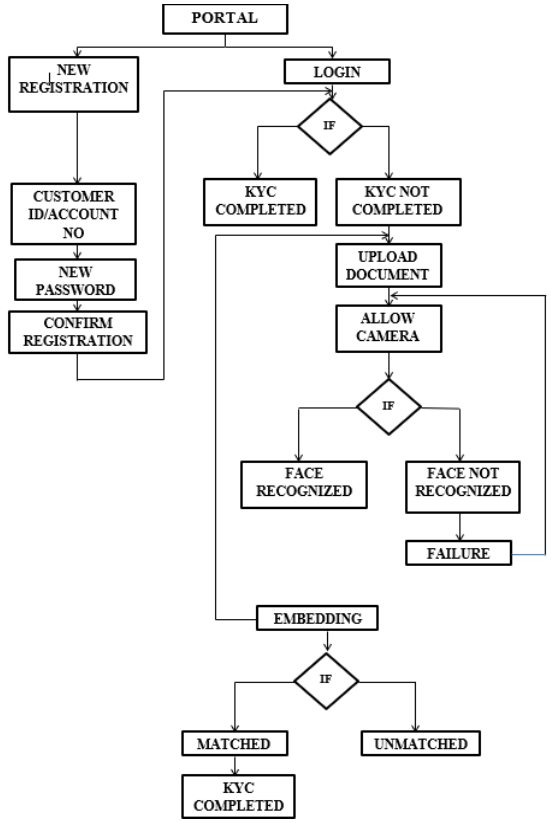

Fig II: Flow Chart

Once a customer visits the portal, there are two options. Under the New Registration process customer need to fill mandatory information about bank details. After set the password and once password get confirm then customer registration process is successfully done. Registered customers go through the login process to do KYC. The customer must upload a document (validate their ID) and grant access to the camera. If the customer's face is not properly recognized, the KYC process fails.

VI. VANILLA JS

The Vanilla script is one of the lightest frameworks ever created. Using it we can create significant and influential applications as well as websites. There are several reasons for choosing vanilla JS to learn and use in our projects, including its simplicity and ease-of-to-use.

There are several reasons for choosing the vanilla js to learn and use it in our projects. Here we are discussing the following three main and most important of them

1. Web-performance
2. User Experience
3. It makes working with frameworks easier as well.

VII. TENSOR FLOW USING PYTHON

TensorFlow is an open-source software library developed by Google researchers. It was originally created for tasks requiring heavy numerical computation. TensorFlow has a faster compile time as compared to other machine learning libraries. It supports CPUs, GPUs, and distributed processing. TensorFlow is based on data flow graphs and provides python and C++ API. As compared to C++, Python API is easy to use. TensorFlow has faster compile time as compared to other libraries in machine learning. The library was originally created for tasks with heavy numerical computation.

VIII. FACE RECOGNITION

Face recognition is the process of identifying or verifying a person's face from photos and videos. Face recognizers generally take face images from photos or videos. Cv2, NumPy, and face_recognition libraries were used in this project. The face-recognition library contains the implementation of the various utilities that help with the process. Also, the face_recognition library provides a useful method called face_locations(), which locates the coordinates of every face detected in the images.

IX. LIVELINESS DETECTION

TensorFlow is the most popular deep learning framework. TensorFlow has pre-trained models that easily help with image classification and image classification using CNN. The classification of the images needs to provide a similar image, which is then trained and retrained through a process known as transfer learning. TensorFlow is the better framework for building face detection and recognition.

X. MONGODB

Mongo dB is an open-source document database that stores structured and unstructured data in JSON format. All individual records are stored as documents, which are collections of fields with a dynamic scheme. When compared to SQL, MongoDB is more adaptable and user-friendly. Document data model is a powerful way to store and retrieve data in any modern programming language.

XI. WORKING

The customer needs to give the password to login. Passwords given by customers are hashed and compared with the MongoDB database. If both are the same, then the authentication process is done, otherwise the response fails. After uploading a document by a customer, it converts the image to a base 64 string using vanilla JS. The document was uploaded successfully after the embedding process. If the embedding process fails, then the customer needs to upload the document again. A user needs to give access to the camera. TensorFlow JS library is used to check for liveliness. Face detection is done by the face recognition library in Python and image capture is done automatically. The captured image is converted to a base 64 string using vanilla JS. Both images were compared using Python. If both image base strings match, then KYC is completed. Else, the response gets failure, and the user needs to repeat the process again by giving access to the camera.

XII. CONCLUSION

The paper tried to implement a platform for easy KYC document verification through a TensorFlow which check user's liveliness in few seconds.

We make A web-based platform for the banking sector that uses real-time KYC with face recognition is available. This technology recognize live faces in photocopies of all legal documents, When the KYC process is completed, the customer receives an email from the bank confirming that the KYC has been completed.

Our proposed method is cost less, secure and real time.

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